THAT WHICH IS CLAIMED IS:

1. A thermal barrier coating composition

(a) a glassy matrix comprising an alkoxy-functionalized siloxane and a functionally-terminated silane or siloxane;

(b) polymethylsilsesquioxane dissolved in a crosslinking agent;

(c) optionally, a filler, and

(d) optionally hollow glass microspheres.

2. The thermal barrier coating composition according to Claim 1, wherein the alkoxy-functionalized siloxane is selected from the group consisting of polydiethoxysiloxane, polydimethoxysiloxane, tetramethoxysiloxane and tetraethoxysiloxane and the functionally-terminated siloxane is an epoxy-functionalized polydiethoxysiloxane.

3. The thermal barrier coating composition according to Claim 1, wherein the crosslinking agent is titanium isopropoxide.

4. The thermal barrier coating compositiong according to Claim 1, wherein the filler is selected from the group consisting of fumed silica, mica, kaolin, bentonite, talc, zinc oxides, iron oxides and pigments.

5. The thermal barrier coating composition according to Claim 1, wherein the glassy matrix is crosslinked using a titanium or tin catalyst.

6. The thermal barrier coating composition according to Claim 5, wherein the titanium or tin catalyst is selected from the group consisting of titatium methoxide, titanium ethoxide, titanium isopropoxide, titanium propoxide, titanium butoxide, titanium diisopropoxide (bis 2,4-pentanedionate), titanium diisopropoxide bis(ethylacetoacetao) titanium ethylhexoxide, dibutyl tin diacetate, dibutyltin laurate, dimethyl tin dineodecanoate, dioctyl dilauryl tin, and dibutyl butoxy chlorotin, and mixtures thereof.

7. The thermal barrier coating composition according to Claim 1, further comprising an anti-corrosion agent.

8. A substrate coated with a thermal barrier composition comprising a glassy matrix comprising an alkoxy-functionalized siloxane and a functionally-terminated silane or siloxane, polymethylsilsesquioxane dissolved in a crosslinking agent, optionally, a filler, and optionally hollow glass microspheres.

9. The substrate according to Claim 8, wherein the substrate is selected from the group consisting of steel, stainless steel, titanium, aluminum, magnesium and zinc.

10. The substrate according to Claim 8, wherein the alkoxy-functionalized siloxane is selected from the group consisting of polydiethoxysiloxane, polydimethoxysiloxane, tetramethoxysilane and tetraethoxysilane and the functionally-terminated siloxane is an epoxy-functionalized polydiethoxysiloxane.

11. The substrate according to Claim 8, wherein the crosslinking agent is titanium isopropoxide.

12. The substrate according to Claim 8, wherein the filler is selected from the group consisting of fumed silica, mica, kaolin, bentonite, talc, zinc oxides, iron oxides, and pigments.

13. The substrate according to Claim 8, wherein the glassy matrix is crosslinked using a titanium or tin catalyst.

14. The substrate according to Claim 13, wherein the titanium or tin catalyst is selected from the group consisting of titatium methoxide, titanium ethoxide, titanium isopropoxide, titanium propoxide, titanium butoxide, titanium diisopropoxide (bis 2,4-pentanedionate), titanium diisopropoxide bis(ethylacetoacetao) titanium ethylhexoxide, dibutyl tin diacetate, dibutyltin laurate, dimethyl tin dineodecanoate, dioctyl dilauryl tin, and dibutyl butoxy chlorotin, and mixtures thereof.

15. The substrate according to Claim 8, further comprising an anti-corrosion agent.

16. A method of forming a thermal barrier composition comprising the steps of

(a) dissolving polymethylsilsesquioxane in a crosslinking agent;

(b) mixing a glass matrix comprising an alkoxy-functionalized siloxane and a functionally-terminated silane with a tin or titanium catalyst to terminate the silanol groups on the end of the siloxane; and

(c) mixing (a) and (b) together.

17. The method according to Claim 16, including adding filler or glass microspheres to the dissolved polymethylsilsesquioxane of step (a) or the mixture of step (c).

18. The method according to Claim 16, wherein the alkoxy-functionalized siloxane is selected from the group consisting of polydiethoxysiloxane, polydimethoxysiloxane, tetramethoxysilane and tetraethoxysilane and the functionally-terminated siloxane is an epoxy-functionalized polydiethoxysiloxane.

19. The method according to Claim 16, wherein the crosslinking agent is titanium isopropoxide.

20. The method according to Claim 16, wherein the filler selected from the group consisting of fumed silica, mica, kaolin, bentonite, talc, zinc oxides, zinc phosphates, iron oxides and pigments.

21. The method according to Claim 16, wherein the titanium or tin catalyst is selected from the group consisting of titatium methoxide, titanium ethoxide, titanium isopropoxide, titanium propoxide, titanium butoxide, titanium diisopropoxide (bis 2,4-pentanedionate), titanium diisopropoxide bis(ethylacetoacetao) titanium ethylhexoxide, dibutyl tin diacetate, dibutyltin laurate, dimethyl tin dineodecanoate, dioctyl dilauryl tin, and dibutyl butoxy chlorotin, and mixtures thereof.

22. The method according to Claim 16, further comprising an anti-corrosion agent.